Lab Report

Client:

PREPARED BY

REVIEWED BY

1 PURPOSE

The purpose of this report is to summarize the results generated from Test 1895.

Test Purpose

This test aims to assess a sustainable shipping solution.

Each sample contained eight unique probing locations per sample, four of which represented payload locations and will be used when determining sample durations. This triplicate test will be used to provide data for the testing.

2 ACCEPTANCE CRITERIA

All data loggers monitoring product temperature must be maintained below -20°C during the verification for the shipping (testing) period of 56 hours against the ISTA 7E Summer - 144 hrs profile.

Any deviations shall be documented and joined to the document, with appropriate actions.

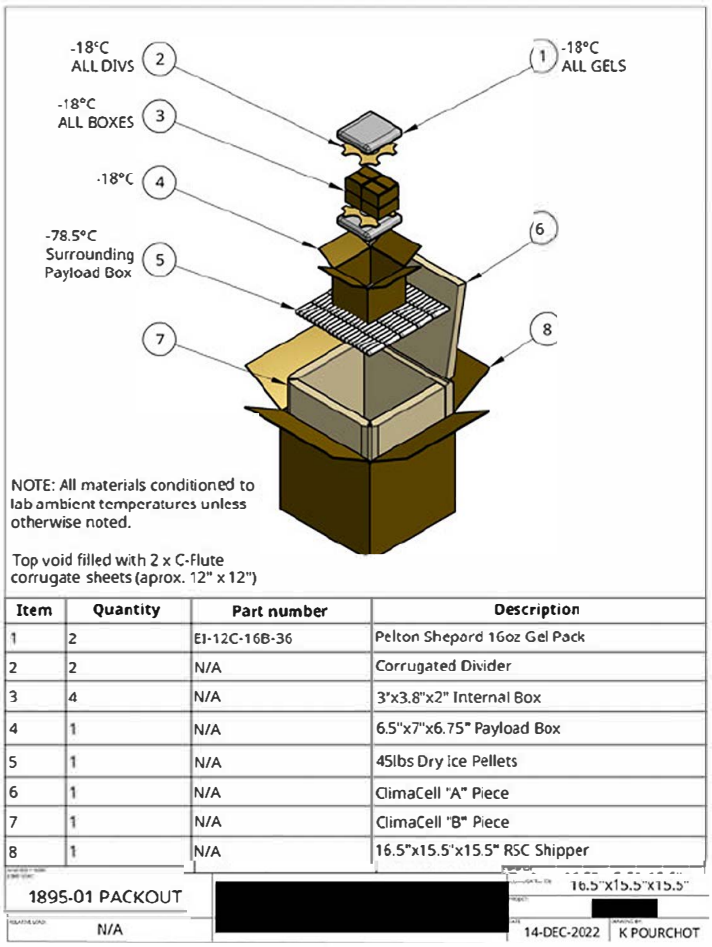
Allowable Excursions

This test did not have any allowable excursions.

3 SAMPLE DETAILS

Sample Group 01: Small Box - 45lbs Dry Ice
Details: N/A

Target Thickness: *1.50* ***inches***
Target Density: *35* ***oz/yd^2***



Item	Quantity	Part number	Description
1	2	EI-12C-16B-36	Pelton Shepard 16oz Gel Pack
2	2	N/A	Corrugated Divider
3	4	N/A	3"x3.8"x2" Internal Box
4	1	N/A	6.5"x7"x6.75" Payload Box
5	1	N/A	45lbs Dry Ice Pellets
6	1	N/A	ClimaCell "A" Piece
7	1	N/A	ClimaCell "B" Piece
8	1	N/A	16.5"x15.5"x15.5" RSC Shipper

1895-01 PACKOUT | [redacted] | 16.5"x15.5"x15.5"
N/A | 14-DEC-2022 | K POURCHOT

1895-01 Packout Diagram

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4 TESTING EQUIPMENT

Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1015	**Last Calibration Date:**	15-Jul-2022
Model Number:	tr-71wf	**Calibration Due Date:**	15-Jul-2023
Serial Number:	3212023F		

Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1019	**Last Calibration Date:**	15-Jul-2022
Model Number:	tr-71wf	**Calibration Due Date:**	15-Jul-2023
Serial Number:	3212032C		

Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1026	**Last Calibration Date:**	06-Aug-2021
Model Number:	tr-71wf	**Calibration Due Date:**	06-Aug-2022
Serial Number:	321203A2		

Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1030	**Last Calibration Date:**	15-Jul-2022
Model Number:	tr-71wf	**Calibration Due Date:**	15-Jul-2023
Serial Number:	3212039D		

Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1031	**Last Calibration Date:**	31-Aug-2022
Model Number:	tr-71wf	**Calibration Due Date:**	31-Aug-2023
Serial Number:	3212030F		

Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1032	**Last Calibration Date:**	11-Jan-2022
Model Number:	tr-71wf	**Calibration Due Date:**	11-Jan-2023
Serial Number:	32120314		

Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1036	**Last Calibration Date:**	13-Jun-2022
Model Number:	tr-71wf	**Calibration Due Date:**	13-Jun-2023
Serial Number:	3212039F		

Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1039	**Last Calibration Date:**	26-May-2022
Model Number:	tr-71wf	**Calibration Due Date:**	26-May-2023
Serial Number:	32120341		

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Equipment Type:	Digital Thermometer	**Manufacturer:**	T&D
Asset Number:	Asset 1042	**Last Calibration Date:**	26-May-2022
Model Number:	tr-71wf	**Calibration Due Date:**	26-May-2023
Serial Number:	32120313		

Equipment Type:	Environmental Chamber	**Manufacturer:**	CSZ
Asset Number:	Chamber 204 (WM-392)	**Last Calibration Date:**	23-Feb-2022
Model Number:	WM-392-MP2H-6-SCT/AC	**Calibration Due Date:**	23-Feb-2023
Serial Number:	19-WM16463		

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TEST RESULTS

SG #	Sample Group Description	Sample #	Reported Duration (hrs)	Profile Tolerance Analysis	User Reqs Met?
1895-01	Small Box - 45lbs Dry Ice	1895-01-1	86.58	Pass	Yes
		1895-01-2	86.42	Pass	Yes
		1895-01-3	80.67	Pass	Yes

Sample Group 01 - Small Box - 45lbs Dry Ice

Chart 1: 1895-01-1 Data

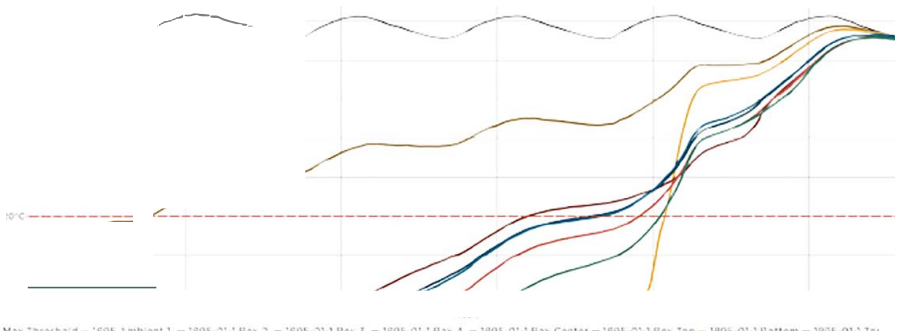

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Chart 2: 1895-01-2 Data

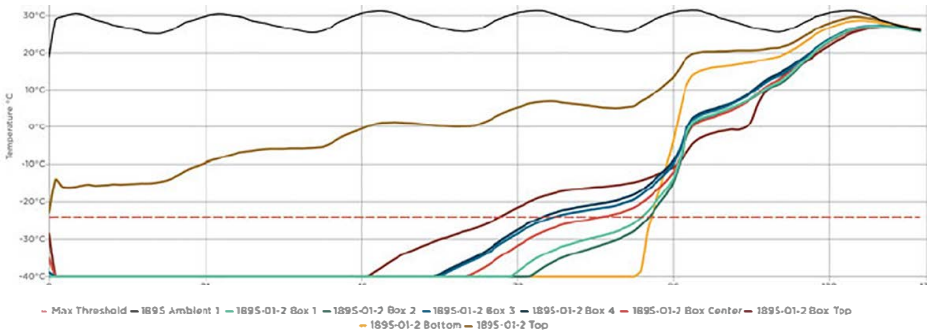
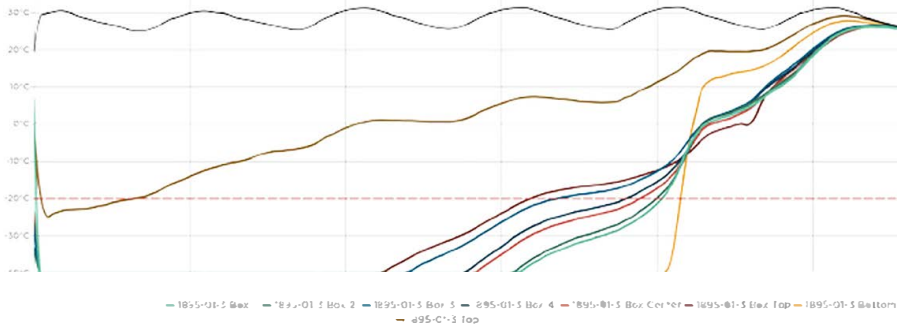


Chart 3: 1895-01-3 Data



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6 CONCLUSIONS

All samples successfully maintained payload temperatures below -20°C for greater than 80 hours.

Note: Near the start of the test, void fill was adjusted from 50% Ranpak dunnage to 2 x corrugated dividers. During this procedure, Each box remained opened for between 1 and 4 minutes, with the procedure completed within 15. All data loggers remained recording throughout the entire process.

Sample ID	Temp	Box 1	Box 2	Box 3	Box 4
1895-01-1	(-20°C)	N/A	97.17	88.00	86.58
	(-15°C)	N/A	99.08	94.75	94.67
	(-13°C)	N/A	99.67	96.33	96.42
	(-4°C)	N/A	102.00	100.83	101.08
1895-01-2	(-20°C)	93.33	94.17	89.08	86.42
	(-15°C)	95.58	96.00	93.25	92.50
	(-13°C)	96.25	96.50	94.50	93.83
	(-4°C)	97.67	97.83	97.42	97.33
1895-01-3	(-20°C)	96.75	95.92	80.67	91.25
	(-15°C)	98.75	98.50	93.42	96.42
	(-13°C)	99.25	99.17	95.75	97.92
	(-4°C)	101.58	101.58	101.08	101.67

1895-01-1 Box 1 data was omitted from analysis due to anomalous temperature readings.

[redacted]

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Version History

VERSION	REASON FOR CHANGE	CHANGES BY	DATE
	Initial Release		21-Dec-2022

[redacted]

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